DOCUMENT RESUME

ED 169 075 TM 008 284

AUTHOR Lorentz, Jeffrey L.; And Others
TITLE The Georgia Assessment of Teacher Effectiveness (GATE) as a Predictor of Reading Achievement.
PUB DATE 1 Dec 78
NOTE 21p.; Paper presented at the Annual Meeting of the National Reading Conference (28th, St. Petersburg, Florida, December 1, 1978)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Behavior Rating Scales; *Classroom Observation Techniques; *Effective Teaching; Grade 5; Grade 6; Intermediate Grades; Predictive Validity; *Reading Comprehension; *Student Behavior; Student Teacher Relationship; *Teacher Behavior; Teaching Methods; *Test Validity
IDENTIFIERS *Georgia Assessment of Teacher Effectiveness

ABSTRACT

In a study of the relationship between teacher behavior and reading achievement, trained observers, using the Georgia Assessment of Teacher Effectiveness (GATE), observed 36 teachers and 820 students in grades five and six. The Iowa Tests of Basic Skills, Reading Comprehension subtest was administered and the socioeconomic status of each student was estimated. The observers visited each classroom six times and obtained a total of 12 GATE records for each classroom. Observable behaviors were recorded, based on 314 GATE items, which were adapted from five existing classroom observation instruments. The GATE has two parts: (1) observable student and teacher behavior, and (2) observable student and/or teaching cognitive and affective behaviors and teaching strategies. Results of the study indicated that: (1) 13 of 15 dimensions found to be indicative of effective teaching in a separate study can be measured by the GATE; (2) six of the dimensions are significant predictors of reading achievement in 36 classrooms; and (3) statements derived from the effective teaching study were supported. (MH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED169075

THE GEORGIA ASSESSMENT OF TEACHER EFFECTIVENESS (GATE) AS A PREDICTOR OF READING ACHIEVEMENT

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

Jeffrey L. Lorentz
Mary B. Creamer
Homer Coker

West Georgia College

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Jeffrey L. Lorentz
Homer Coker

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

A paper presented at the
28th Annual Meeting, National Reading Conference
December 1, 1978
St. Petersburg, Florida

TM 008 284

The Georgia Assessment of Teacher Effectiveness (GATE) as a Predictor of Reading Achievement

Jeffrey L. Lorentz, Mary B. Creamer & Homer Coker
West Georgia College, Carrollton

Introduction

The present paper is based on data collected by the Carroll County, Georgia Competency-Based Teacher Certification (CBTC) project which has been looking at teacher behavior in actual classrooms for the past five years.

The CBTC project has applied five objective, systematic direct observation instruments in the course of this study. These include the Spaulding Teacher Activity Rating Schedule (STARS) (Spaulding, 1970); the Coping Analysis Schedule for Educational Settings (CASES) (Spaulding, 1969); the Observation Schedule and Record, Form 5 Verbal (OScAR 5V) (Medley, 1973); the Florida Climate and Control System (FLACCS) (Soar, Soar & Ragosta,1971); and the Teacher Practices Observation Record (TPOR) (Brown, 1968). These five are measures of teacher behaviors, student behaviors and teacher-student interactions. They are designed to be used by especially trained observers in ongoing classrooms and have been shown to provide stable, reliable measures of classroom behavior in a number of other studies as well as in the CBTC project.

Earlier papers presented to the NRC have discussed relationships between behaviors observed with CASES and FLACCS and reading achievement (Coker & Lorentz, 1975, 1976) and between

behaviors observed with STARS and reading achievement (Lorentz & Coker, 1977). The present paper discusses the relationship between behaviors observed with the newly-developed Georgia Assessment of Teacher Effectiveness (GATE) and reading achievement.

Research on Teacher Effectiveness

Medley (1977) reviewed the research in teacher effectiveness to provide the teacher educator with access to meaningful findings. He retained 289 studies from an original list of 732. These 289 studies were examined for empirically obtained process-product relationships which were subjected to the following four criteria:

1. The relationship had to be generalizable.
2. The relationship had to be both statistically and practically significant.
3. The measures had to be based on long-term student gain.
4. The process measures had to specify behavior exhibited so that replication is possible.

Medley found that 613 process-product relationships, which came from only 14 studies, met these criteria. He reported 41 common elements of classroom behavior and subsets of these elements as they related to grade, SES, and gain in reading, arithmetic and affect.

CBTC Project staff, with the assistance of project consultants, reduced these 41 common elements to the following 15 dimensions of classroom behavior related to student growth:

1. When teachers work with large groups rather than small groups student gain is more likely to occur.

2. When small groups work without adult supervision student gain is less likely to occur.

3. Seatwork by the student is more effective when there is an appropriate balance between teacher focusing and structuring, and student choice of either what, how, or when.

4. An increase in structured academic time is associated with greater student gain.

5. The use of explicit cognitive teaching material for a given subject is more likely to result in student gain than the use of games and toys.

6. When students initiate verbal interactions, gain is less likely in lower grades but more likely in intermediate and higher grades.

7. Student correct substantive responses to teacher questions are related to greater student gain.

8. High cognitive level questions relate negatively to student gain and low cognitive level questions relate positively to student gain, even for complex learning outcomes.

9. When teacher amplify and discuss student responses, high socioeconomic status students tend to show greater gain than do low socioeconomic status students.

10. Individualized instruction (teacher working with individual student) appears to be about equally negatively and positively related to student gain.

11. Teacher hostility and rebuking behavior relates negatively to student gain.

12. Disruptive student behavior is negatively associated with student gain.

13. Student involvement (time on task) is associated positively with student gain.

14. Non-substantive interaction between teacher and students relates negatively to student gain.

15. Unstructured student behavior is negatively related to student gain for a given learning task; a balance between teacher structuring and student freedom provides the optimal setting for student gain.

The Problem

These 15 dimensions became the basis for two questions addressed in the present study:

1. Are the 15 dimensions derived from Medley's review observable in on-going classrooms?
2. Are these dimensions significant predictors of reading achievement?
3. Will the relationships reported which are contrary to popular belief be supported?

Method

Subjects

The subjects of the present study, 36 classroom teachers, grades 5 and 6, are a subset of the 53 teachers from a large metropolitan school district who participated in the CBTC Project during the 1977-78 school year. Each of these 36 teachers taught Reading to the students (N=820) in the sample selected.

Measures

The Iowa Tests of Basic Skills, Form 5 and 6, Levels Edition, (ITBS) (A. N. Hieronymus and E. F. Lindquist, 1971) was given to all pupils involved in the study. The Reading Comprehension subtest only was used in the present study. The reported reliability and validity for the ITBS are adequate for use in the present study.

SES. An estimate of the socioeconomic status (SES) was obtained for each pupil based upon the occupation of the family's principal bread-winner. This occupational information was transformed to a 1-8 scale (1=high status, 8=low status) using a modified version

of Warner, Meeker, and Eells (1960) classification of occupations and levels. Pupils with missing SES were assigned the mean for their classroom, rounded to the nearest whole number.

GATE. One outcome of the CBTC study is the Georgia Assessment of Teacher Effectiveness (GATE) which is a composite measure derived from the five observation instruments cited earlier. GATE contains 314 sign items which were adapted and synthesized from the 1,344 category and sign items on the five instruments. These were found to be the most reliable and stable items of the original 1,344 and appeared to represent the most important elements of the original instruments.

These items are divided into two sections, Section A and Section B. Section A consists of two major parts: Student Behavior and Teacher Behavior. Observable behaviors are coded in a matrix of numbered cells designating specific teacher and student interactions. The observations are coded during a five-minute period of time.

Section B consists of three major parts: Student, Teacher Methodology, and Teacher Affect/Control. It is designed to record specific student and/or teacher cognitive and affective behaviors as well as teaching strategies. This section is coded from memory immediately after each five-minute observation period for Section A.

When Sections A and B have been coded, one record is complete. Two records are usually made during one classroom visit by a single observer. (In the present study three trained observers coded two records on two different visits to each classroom for

12 records on each class.)

The GATE can be administered only by specially trained observers. The role of the observer is to record those behaviors which occur while making no evaluative judgments about the appropriateness of the methods used, the quality of the instruction, the clarity of explanations, etc.

The items on GATE can be scored on a variety of keys to yield multiple stable measures of teachers' classroom behavior. The scoring of the GATE is independent of the data collection by observers. Coker (1978) provides a complete description of GATE.

Procedures

Data Collection

The initial Reading tests were administered early in the Fall (1977) to 820 students in the 36 Reading classrooms and posttests administered in late Spring (1978) in the same 36 classrooms. A group of specially-trained testers administered the tests in each classroom. An estimate of each student's social status (SES) was obtained based on parental occupation.

During regular class sessions, trained observers visited each classroom on six different occasions and obtained two GATE records on each visit.

Visits were scheduled in advance, but no attempt was made to preselect the activities to be observed, since the intent was to record a representative sample of the behavior present in each classroom.

All observations were made by experienced classroom teachers who had been employed full-time by the CBTC Project as observers and been personally trained by the authors of GATE. Observer agreement studies, conducted in non-project classrooms, confirmed that the observers were consistently able to maintain agreement of 80 percent or better.

Scoring

Tests were hand or machine scored, keypunched and verified. Observation data were keypunched from the data collection forms and verified. All data processing was performed at West Georgia College's Computer Center.

ITBS reading scores were converted from raw scores to Standard Scores using the published Standard Score Tables (Houghton Mifflin, 1973). These scores used a normalized standard score scale with a mean of 80 and a standard deviation of 20 for the entire grade range, 3-8 data in a single analysis.

Two additional variables were generated for each student. These were pretest squared (Pre x Pre) and the product of pretest and grade level (Pre x Grade). The product term, Pre x Grade, was entered since the correlations of pretest and posttest tend to increase at higher grade levels, and this term permits fitting different regression slopes at different grade levels. The pretest squared term permits fitting a two degree curve to the relation between pretest and posttest, and tests if a non-linear fit is significantly better than a linear one.

The pretest Reading score, SES, pretest squared and the product term (Pre x Grade) were regressed on posttest to obtain a residual

(i.e., gain score) for each student. These residuals were reduced to classroom means and became the dependent variable in the subsequent analyses. Table 1 presents SES, Pretest, Posttest

INSERT TABLE 1 HERE

and residual gain means for each class.

A set of GATE scores for each class was generated in the following way: CBTC Project staff and consultants selected items from GATE which appeared to reflect each of the dimensions from Medley's study. Two of the 15 (Dimensions 5 and 10) were apparently not reflected in GATE and thus dropped from further analysis.

The 12 records for each teacher were then scored on the remaining 13 dimensions. Each item, in z-score form, was given positive or negative weight and the resulting sum was standardized to a mean of 50 and standard deviation of 10 for the total group of 53 teachers. Table 2 presents the 13 dimensions, the

INSERT TABLE 2 HERE

number of GATE items, Coefficient Alpha reliability, and the standard deviation. Since the scores are the sum of z-scores, the mean for each score is 0. Coefficient Alpha reliability was estimated using Hoyt's (1941) method.

Regression Analysis

The classroom being the unit of analysis, the 13 GATE-scored Medley dimensions were regressed on mean residual gain in reading

achievement using the stepwise regression procedure from the SAS library (Barr and others, 1976). The procedure selected was that which maximizes R^2 at each step by selecting the best one-variable model, the best two-variable model, etc.

Since the present study was exploratory, the decision was made to leave the unreliable GATE scored dimensions (Dimensions 1 and 7) in the analysis.

Results

All 13 independent variables entered the equation as is shown in the summary table, Table 3. This table lists each dimension

INSERT TABLE 3 HERE

entered (and/or replaced) in each step of the regression along with the simple zero-order correlation with Reading gain, the multiple R and R^2, the unstandardized regression weight (b-weight) and the F-ratio and its probability.

The first four steps revealed that five dimensions (15, 6, 1, 9 and 14 - in that order) were significant ($p < .05$) predictors of Reading gain and that four of these (excluding 6) accounted for 43.4% of the variance in gain.

Even more important is the finding that the significant predictors are related to Reading gain in essentially the same manner as reported by Medley. This is illustrated in Table 4.

INSERT TABLE 4 HERE

Conclusion

The three questions which guided this study have been answered in the affirmative, viz:

1. Thirteen of the fifteen dimensions derived from Medley's review can be recorded on GATE in on-going classrooms;

2. Six of these dimensions are significant ($p < .05$) predictors of reading achievement in 36 classrooms.

3. The results generally supports the statements derived from Medley's study.

REFERENCES

Barr, A. E. & others. Users guide to SAS 76. Raleigh, N.C.: SAS Institute, Inc., 1976.

Brown, B. B. The experimental mind in education. New York: Harper & Row, 1968.

Coker, H. & Lorentz, J. L. An examination of student coping style, teacher control, and student growth in reading. Paper presented at the 25th Annual Meeting, National Reading Conference, St. Petersburg, Florida, 1975.

Coker, H., & Lorentz, J. L. Growth in reading as a correlate of pupil classroom behavior. Paper presented at the 26th Annual Meeting, National Reading Conference, Atlanta, Georgia, 1976.

Coker, J. G. A study of student teaching using direct observation. Unpublished doctoral dissertation, Georgia State University, 1978.

Hoyt, C. Test reliability estimated by analysis of variance. Psychometrika, 1941, 6(3), 153-160.

Lorentz, J. L., & Coker, H. Observed patterns of teacher-pupil classroom behavior as predictors of student growth in reading. Paper presented at the 27th Annual Meeting, New Orleans, Louisiana, 1977.

Medley, D. M. Observation schedule and record, form 5 verbal (OScAR 5V). Mimeograph, University of Virginia, 1973.

Medley, D. M. Teacher competence and teacher effectiveness. Washington, D. C.: American Association of Colleges for Teacher Education, 1977.

Soar, R. S., Soar, R. M., & Ragosta, M. Florida climate and control system (FLACCS). Gainesville, Florida: Institute for Development of Human Resources, University of Florida, 1971.

Spaulding, R. L. Classroom behavior analysis and treatment. Education Improvement Program. Duke University, Durham, N.C., 1969.

Spaulding, R. L. Spaulding teacher activity rating schedule (STARS). San Jose State University, San Jose, Ca., 1970.

Warner, W. L., Meeker, M., & Eells, K. Social class in America. New York: Harper, 1960.

TABLE 1

MEANS BY CLASS

CLASS	GRADE	SES	PRETEST READING	POST TEST READING	RESIDUAL GAIN
1	5	2.9	82.0	86.0	0.92
2	5	3.2	77.9	81.8	0.95
3	6	2.9	90.6	96.7	6.91
4	5	2.4	83.8	88.0	1.69
5	6	3.0	90.8	96.3	5.93
6	6	4.5	79.4	77.9	-2.14
7	6	3.0	92.1	92.9	1.72
8	6	2.9	91.2	90.9	0.26
9	5	3.1	74.0	79.7	2.10
10	5	3.3	80.7	83.3	0.58
11	6	2.8	99.0	100.4	3.60
12	5	2.7	89.0	91.0	0.66
13	5	2.7	93.0	93.3	-0.97
14	6	3.0	90.3	93.4	4.04
15	5	5.0	60.4	58.0	-9.05
16	6	5.0	75.0	77.8	0.93
17	5	5.4	61.3	67.5	0.15
18	6	5.1	69.6	73.7	-0.69
19	5	5.4	62.5	70.3	2.06
20	6	4.9	74.2	79.7	2.72
21	6	4.3	76.7	77.7	-1.09
22	6	2.5	94.6	97.5	3.39
23	5	2.9	88.4	94.4	4.61
24	5	2.5	89.0	91.3	0.42
25	6	2.7	92.7	95.3	2.69
26	6	4.0	78.4	82.3	1.84
27	5	3.8	78.3	80.9	0.28
28	6	3.7	86.3	86.3	0.62
29	6	3.7	96.4	89.4	-4.15
30	5	3.7	81.0	83.4	0.57
31	5	4.3	71.3	72.4	-2.70
32	5	4.1	71.4	77.2	2.49
33	6	5.1	70.4	67.0	-7.45
34	5	4.6	72.2	75.5	1.01
35	6	5.0	74.8	75.3	-1.59
36	6	5.1	76.5	70.1	-7.70
TOTAL		3.7	81.0	83.3	0.46

TABLE 2

MEDLEY'S DIMENSIONS AS SCORED

ON GATE

(N = 53 Classes)

No.	Dimension	GATE Items	Alpha Reliability	Standard Deviation
1.	Large group instruction	4	0	1.38
2.	Small groups without adult supervision	4	51	2.54
3.	Student seatwork, teacher structuring, student choice	7	29	2.58
4.	Structured academic time	25	78	9.97
5.	Explicit cognitive material*	--	--	----
6.	Student verbal initiation	17	73	7.38
7.	Correct responses to teacher questions	9	0	2.41
8.	Low cognitive level questions	4	32	2.29
9.	Teacher discussion of student response	8	61	4.15
10.	Teacher working with individual student*	--	--	----
11.	Teacher hostility and rebuking behavior	26	68	7.24
12.	Disruptive student behavior	12	64	4.94
13.	Student involvement (time on task)	34	65	9.35
14.	Non-substantive teacher-student interaction	9	51	4.05
15.	Unstructured student behavior	8	42	3.60

*not measured by GATE

TABLE 3

SUMMARY OF STEPWISE ANALYSIS

Step	Variable Entered (Replaced)	Simple r	Multiple R	Multiple R^2	b Weight	F
1.	15 - Unstructured student behavior	-37	37	138	-0.12	5.46*
2.	6 - Student verbal initiation	14	50	247	0.11	4.76*
3.	1 - Large group instruction	30	59	343	0.10	4.68*
	9 - Teacher discusses student response (Replaces 6)	24	59	350	0.11	5.93*
4.	14 - Non-substantive T/S	-01	66	434	-0.12	4.61*
5.	6 - Student verbal initiation	14	68	461	0.07	1.52
6.	2 - Small groups supervised	18	70	491	0.06	1.68
7.	3 - Student seatwork	-12	72	516	-0.07	1.50
8.	11 - Teacher hostility	-19	73	532	-0.05	0.89
	4 - Structured academic time (Replaces 9)	-18	73	537	-0.09	1.70
	7 - Correct response (Replaces 3)	-03	74	553	-0.08	1.64
9.	12 - Disruptive students	-13	75	566	-0.04	0.74
10.	3 - Student seatwork	-12	75	569	-0.03	0.19
	8 - Low cognitive level questions (Replaces 12)	10	76	571	-0.06	0.64
11.	13 - Time on task	06	76	576	0.04	0.29
12.	9 - Teacher discusses student response	24	76	579	0.03	0.17
13.	12 - Disruptive students	-13	76	580	-0.01	0.07

*$p < .05$

TABLE 4

SIGNIFICANT PREDICTORS

COMPARED WITH MEDLEY

Dimension	Contribution to Reading Gain	Medley's Findings*	Grade	Table
15 - Unstructured s. behavior	Negative	High (structured vs unstructured)	I-II	6
6 - S. verbal initiations	Positive	Low at lower grades	I-II	14
		High at upper grades	IX-XII	14
1 - Large groups	Positive	High	III	3
9 - Teacher amplification	Positive	Low with Low SES	I-III	21
		High with High SES		
14 - Non-substantive interchange	Negative	Low	II-III	42

*High indicates a positive correlation, Low a negative correlation

Page

GEORGIA ASSESSMENT OF TEACHER EFFECTIVENESS

(Revised 1978)

SECTION A

TEACHER

STUDENT

		1. Listens, watches, complies	2. Answers quest. directed to him	3. Answers quest. voluntarily	4. Question for Information	5. Question for verification	6. Volunteers comment	7. Off-Task Questions or comments	8. Individual Off-Task (V or Non V)	9. Disruptive Off-Task (V or Non V)
		01	02	03	04	05	06	07	08	09
PRESENTING	10. Directing - learning related									
	11. Directing - non learning related									
	12. Orienting									
	13. Motivational / Prob. struct, (set induction)									
	14. Explains, discusses, tells									
	15. Digressions									
QUESTIONING	16. No wrong answer (opinion)									
	17. Recall / rote / information									
	18. Use or Application									
	19. Ampli / Eval / Elaborate - own idea									
	20. Ampli / Eval / Elaborate - others' idea									
	21. Status									
RESPONDING	22. Praise - W or W/O reason									
	23. Tells, gives info.									
	24. Wrong answer, gives info.									
	25. Accepts - neutral									
	26. Uses, extends									
	27. Waits (cog)									
	28. Focus									
	29. Asks another student									
	30. Repeats after feedback (non sub)									
	31. Suggests / questions / directs									
	32. Interrupts / rejects / ignores									
	33. Criticizes / commands									
	34. Code Involvement								X	

GEORGIA ASSESSMENT OF TEACHER EFFECTIVENESS

(Revised 1978)

SECTION B

STUDENT

	35. Enthusiastic	
	36. Praises another	
	37. Pats, hugs	
	38. Laughs	
	39. Shows pride	
	40. Agrees	
	41. Friendly, V or non-V	
	42. Co-op, shares V or non-V	
	43. Code Involvement	
	44. Intense Involvement	
	45. Leadership	
	46. Self-directed, appro.	
	47. Works w/social	
	48. Collab. work/play	
	49. Compet. work/play	
	50. Self-directed; Inappro.	
	51. Wanders about	
	52. Pouts, withdraws	
	53. Makes face, frowns	
	54. Horseplay	
	55. Tattles	
	56. Teases	
	57. Resists	
	58. Picks at another	
	59. Dem / com / boss / con	
	60. Disr / an / thr / inter	
	61. Crit / disparages (T)	
	62. Att / hit / hurt / -agg	
	63. Takes/damage/stamp/throws	
	64. Code Involvement	
	65. Shows fear, shame	
	66. Task related comment (T)	
	67. Non-task comment	
	68. S. ans. another S.	
	69. Confused (T)	
	70. Code Interest / Attn.	

COMMENTS:

METHODOLOGY

Motivation		71. Intrinsic
		72. Extrinsic
Approach		73. Dir/formal
		74. Indir/infor.
Involvement		75. Join/part.
		76. Aloof/det.
		77. Close sup.
Focus		78. T. Q. Prob.
		79. S. Q. Prob.
Source		80. Text
		81. Other
Student Resp.		82. Same mat.
		83. Indiv. mat.
Eval.		84. Same all
		85. Indiv. Stu.
Student Expres.		86. Discourage
		87. Encourage
Student Perpl.		88. Prevents
		89. Fosters
Mis-inform		90. Accepted
		91. Corrected
Strategy		92. Inductive
		93. Deductive
		94. Transductive
		95. Expository
Cogn. Level		96. Simple
		97. Complex
Use of Student Time		98. Indep. work
		99. Pas. Comp.
		100. Act. Comp.
		101. T assign S

Homer Coker
West Georgia College
Carrollton, Georgia 30118

TEACHER AFFECT NON-VERBAL CONTROL

	102. Warm, cong.		
	104. Nod, smiles		105
	106. Tou/pat/hug		107
	108. Pause		109
	110. Eye contact		111
	112. Ignore		113
	114. Gestures		115
	116. Signals/raps		117
	118. Shakes head/Shh!		119
	120. Takes something		121
	122. Glares, Frowns		123
	124. Holds, Pushes		125

VERBAL

	126. Praise		127
	128. Agrees, Supports		129
	130. Pos. Indiv. attn.		131
	132. Says stop		133
	134. Warns		135
	136. Firm / sharp		137
	138. Sco / pun / hum		139

GROUPING

	Non-pres WT.		WOT	No. of Stu.	Prescribed WT.		WOT	
140		145		1		149		154
141		146		2 - 3		150		155
142		147		4 - ½		151		156
143		148		½ +		152		157
144				ALL		153		158

SUBJECT KEY:

01.–Music & Art
02.–Lang. Arts
03.–Literature
04.–Math
05.–Reading
06.–Science
07.–Soc. Stu.
08.–Other